



**Wil McCarthy**

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06 August 2003

Daniel Petkovsek, Patent Examiner  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

#8/Response  
Margha  
8/12/03

Dear Mr. Petkovsek,

This letter is to itemize and clarify our responses to your recent office action. Enclosed please find a marked-up copy of the application and drawings, a clean copy of the revised application and drawings, a two-page Information Disclosure Statement, and two articles cited as references.

**Written Response of Wil McCarthy and Gary Snyder to  
Office Action dated 09 June 2003  
for Patent Application/Control Number 09/964,927  
Art Unit: 2874  
Examiner: Daniel J. Petkovsek**

**Priority**

*The date given with the claim for benefit of provisional application 60/312,264 of August 14, 2001 is not consistent with PTO records.*

The date in the application has been changed from 13 August 2001, an incorrect value, to 14 August 2001, the value given on our PPA filing receipt.

**Information Disclosure Statement**

*2) Reference AX... is incomplete and does not have a verification of the source document.*

A copy of the relevant sections of the original article is enclosed. One additional patent and one additional article have been added to my references, and are listed on the enclosed Information Disclosure Statement. I have not repeated the references already made of record, nor the ones cited by you on form PTO-892. I hope this is correct.

I have also added text to the specification addressing several of the prior-art patents cited by you on form PTO-892.

3) *New corrected drawings are required in this application because Figures 1, 2, 3A and 3B are included in the disclosure.*

I received a Formalities Letter (confirmation number 2183) dated 10/30/2001 directing me to remove all drawings or flow diagrams from the specification. I responded with an updated specification in which Figures 1, 2, 3A, and 3B had been removed (not moved to the drawing section). For this I received an Updated Filing Receipt (confirmation number 2183), dated 01/10/2002.

However, per your request I have restored Figures 1, 2, 3A and 3B and placed them in the drawings section, clearly marked as PRIOR ART. Additionally, in response to your request for additional detail, I have added a Figure 4c showing in detail how the optional memory layer is constructed. Corresponding descriptive text has been added to the specification for clarity.

4,5) *Spelling mistakes*

Misspellings, mistyped figure numbers in the text, and "I/we" informalities have been corrected.

6) *Preferred layout*

The application document has been reorganized to conform to the preferred layout.

7) *The title of the invention is not descriptive.*

Title of the invention has been changed from "Quantum Dot Fiber" to "Programmable Dopant Fiber."

8) *Informalities*

The identified informalities in claims 1, 2, and 5-7 have been corrected.

11) *Claims 1-8 are rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The claims of the invention of Applicant are vague and indefinite for the independent claims 1 and 7. It is unclear to a person having ordinary skill in the art as to how the device for producing quantum effects, or the method for controlling dopants in the interior of bulk materials, would work. There is no reasonable description in the disclosure or claims for how the device/method is composed, constructed, or functioned. A more full and clear description of the device/method is needed in both the specification and the claims.*

Considerable detail has been added to the background and disclosure, both in the text and by reference, as to how quantum dot particles and quantum dot devices are composed and how they function, although we do not consider these to be the invention. Additional detail is also provided about the composition and functioning of the invention itself, and an additional drawing, Figure 4c, has also been added for clarity, along with two additional dependent claims which clarify what we consider the invention to be.

The wording of the claims has also been adjusted to include slightly more information. However, please be aware that we do not presently consider the exact functioning of a quantum dot device or particle, or the precise mechanisms by which dopants alter the behavior of materials, to be part of the invention. In our view, the functioning of quantum dots as programmable dopants is already well established in thin films and on the surfaces of microchips. Our invention is specifically a fiber with quantum dots attached, along with wires to control the dots' doping properties even in the interior of bulk materials -- something which is not possible in the prior art.

I checked a box on my application form asking for assistance in writing one claim. If the rewritten claims 1 and 7 are still unacceptable, is this still a possibility? With assistance in rewriting Claim 1, I can rewrite the other claims myself using that one as a model.

## 12) *Indefinite statements*

All indefinite statements have been removed from the claims.

*14) Claims 1-6 are rejected under 35 USC 102(e) as being anticipated by Fan et. al. USP no. 6,512,242., [which] teaches a device for producing quantum effects comprising: a fiber shaped material 504, energy carried along the fiber with control, and quantum dots (502, 503) near the surface of the fiber that hold energy in the control paths. Regarding the whereby statements, these statements are the intended result of the limitations (a)-(c) and are fully met by any reference disclosing (a)-(c).*

Limitation (c) has been rewritten to include details which, we hope, explicitly distinguish it from the invention of Fan et. al. In particular, replacing "on or near the surface of the fiber" with "on the surface of the fiber." Additional language has also been added to the prior art section to explain the differences between Fan's invention and ours, with particular focus on the shortcomings of Fan's invention as a programmable dopant -- a function it was not designed to perform, and cannot perform.

*15) Claims 7 and 8 are rejected under 35 USC 102(e) as being anticipated by Stinz et. al. [which] teaches a way of controlling dopants in a bulk substrate comprising: confining charges with carriers having quantum wavelike properties (dots/dashes, Fig 12B) the inherently are smaller (since quantum) than the de Broglie wavelength, and carrying energies (usefulness with gain properties) while imbedded in the solid material. Regarding the whereby statements, these statements are the intended result of limitations (a)-(b), and are fully met by any reference disclosing (a)-(b). Regarding Claim 8, quantum dot particles are used.*

Additional language has been added to the prior art section to clarify the differences between Stinz's invention and ours. In addition, the phrase "in real time, well after their time of manufacture" has been added to claim 7 (now 9) to distinguish the two, since the doping properties of Stinz's "quantum dashes" cannot be adjusted except by changing their size, shape, and composition at the time of manufacture. We have also added a limitation (c) to clarify the method, and this may also help to distinguish it.

However, as explained in additions to the prior art section, it seems plausible to us that the language of limitation (b) already excludes Stinz's invention, since that invention does not provide "conduits" to carry energy to the quantum dashes, but rather transmits the energy directly through the substrate in which they're embedded.

All Best Wishes,



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